

What is claimed is:

1. A method for producing a bonded article comprising a first substrate, a second substrate, and a bonding layer through which the first and second substrates are bonded, said method comprising the steps of interposing a water-based bonding agent between the first and second substrates, and forming the bonding layer by heating the water-based bonding agent, said water-based bonding agent comprising an alkali metal element and having a water-soluble compound dissolved therein, said water-soluble compound producing a composite oxide by heating.

2. The method set forth in claim 1, wherein said alkali metal element is lithium.

3. The method set forth in claim 1 or 2, wherein said water-soluble compound is a composite hydroxide containing said alkali metal element.

4. The method set forth in claim 2, wherein said water-soluble compound is a composite hydroxide containing said alkali metal element.

5. The method set forth in claim 3, wherein said composite hydroxide is selected from the group consisting of niobium-lithium hydroxide, tantalum-lithium hydroxide, niobium-tantalum-lithium hydroxide, niobium-lithium-potassium hydroxide, tantalum-lithium-potassium hydroxide and niobium-tantalum-lithium potassium hydroxide.

6. The method set forth in claim 4, wherein said composite hydroxide is selected from the group consisting of niobium-lithium hydroxide, tantalum-lithium hydroxide, niobium-tantalum-lithium hydroxide, niobium-lithium-potassium hydroxide, tantalum-lithium-potassium hydroxide and niobium-tantalum-lithium potassium hydroxide.

7. The method set forth in claim 1, wherein said composite oxide is selected from the group consisting of lithium niobate, lithium tantalate, lithium niobate-lithium tantalate solid solution, lithium potassium niobate, lithium potassium tantalate and lithium potassium niobate-lithium potassium tantalate solid solution.

8. The method set forth in claim 2, wherein said composite oxide is selected from the group consisting of lithium niobate, lithium tantalate, lithium niobate-lithium tantalate solid solution, lithium potassium niobate, lithium potassium tantalate and lithium potassium niobate-lithium potassium tantalate solid solution.

9. The method set forth in claim 1, wherein at least one of the first substrate

and the second substrate is made of a single crystal.

10. The method set forth in claim 2, wherein at least one of the first substrate and the second substrate is made of a single crystal.

11. The method set forth in claim 9, wherein the single crystal is selected from the group consisting of a ferroelectric electro-optic single crystal is particularly preferable. Mention may be made of lithium niobate, lithium tantalate, lithium niobate-lithium tantalate solid solution, lithium potassium niobate, lithium potassium tantalate, lithium potassium niobate-lithium potassium tantalate solid solution, KTP, glass, silicon, GaAs, and quartz.

12. The method set forth in claim 10, wherein the single crystal is selected from the group consisting of a ferroelectric electro-optic single crystal is particularly preferable. Mention may be made of lithium niobate, lithium tantalate, lithium niobate-lithium tantalate solid solution, lithium potassium niobate, lithium potassium tantalate, lithium potassium niobate-lithium potassium tantalate solid solution, KTP, glass, silicon, GaAs, and quartz.

13. The method set forth in claim 1, wherein the bonded article is an optical member.

14. The method set forth in claim 2, wherein the bonded article is an optical member.

15. A bonded article produced by claim 1.

16. A bonded article produced by claim 2.

17. A water-based bonding agent containing an alkali metal element, and comprising a water-soluble compound which produces a composite oxide by heating, and water into which said water-soluble compound is dissolved.

18. The bonding agent set forth in claim 17, wherein said alkali metal element is lithium.

19. The bonding agent set forth in claim 17, wherein said water-soluble compound is a composite hydroxide containing said alkali metal element.

20. The bonding agent set forth in claim 18, wherein said water-soluble compound is a composite hydroxide containing said alkali metal element.

21. The bonding agent set forth in claim 19, wherein said composite hydroxide is selected from the group consisting of niobium-lithium hydroxide, tantalum-lithium hydroxide, niobium-tantalum-lithium hydroxide, niobium-lithium-

potassium hydroxide, tantalum-lithium-potassium hydroxide and niobium-tantalum-lithium potassium hydroxide.

22. The bonding agent set forth in claim 20, wherein said composite hydroxide is selected from the group consisting of niobium-lithium hydroxide, tantalum-lithium hydroxide, niobium-tantalum-lithium hydroxide, niobium-lithium-potassium hydroxide, tantalum-lithium-potassium hydroxide and niobium-tantalum-lithium potassium hydroxide.

23. The bonding agent set forth in claim 17, wherein said composite oxide is selected from the group consisting of lithium niobate, lithium tantalate, lithium niobate-lithium tantalate solid solution, lithium potassium niobate, lithium potassium tantalate and lithium potassium niobate-lithium potassium tantalate solid solution.

24. The bonding agent set forth in claim 18, wherein said composite oxide is selected from the group consisting of lithium niobate, lithium tantalate, lithium niobate-lithium tantalate solid solution, lithium potassium niobate, lithium potassium tantalate and lithium potassium niobate-lithium potassium tantalate solid solution.

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